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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,267	03/16/2004	Rocco DiFoggio	584-37008-USCP	4720
24923	7590	12/11/2006	EXAMINER KUNDU, SUJOY K	
PAUL S MADAN MADAN, MOSSMAN & SRIRAM, PC 2603 AUGUSTA, SUITE 700 HOUSTON, TX 77057-1130			ART UNIT 2863	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,267

Applicant(s)

DIFOGGIO ET AL.

Examiner

Sujoy K. Kundu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-20 and 31-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-20 and 31-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objection

Claim 10 objected to because of the following informalities: Claim 10 is dependent on claim 10. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

With respect to claim 11 the method does not produce a tangible result. It is unclear how the value of the property result is being stored, displayed, or used in any tangible manner.

New 35 U.S.C. 101 guidelines can be found at the link provided below:

<http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1, 11, 31, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak et al. (5,741,962) in view of Matsiev et al. (6,494,079).

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Birchak teaches the features of the claims for determining a property of a fluid downhole comprising:

- a resonator (Fig. 2, 109, Column 5, Lines 26-39);
- a controller that actuates the resonator (Column 4, Lines 12-22);
- a processor that estimates the property for the fluid downhole (Column 4, Lines 12-22).

However, Birchak does not teach a resonator in contact with the fluid.

Matsiev teaches a resonator in contact with the fluid (Figure 2, Abstract, Column 7, Lines 29-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a resonator in contact with the fluid as taught by Matsiev into Birchak for the purpose of measuring the physical, electrical, and chemical transformation of fluid composition (Matsiev, Column 1, Lines 39-50).

Claim 2, 4, 12, 14, 32-34, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak et al. (5,741,962) and Matsiev et al. (6,494,079) and in further view of Kleinberg (6,346,813).

With regards to claim 2, 12 Birchak and Matsiev in combination do not teach wherein the processor uses a chemometric equation for estimating the property. However, Kleinberg teaches an apparatus wherein the processor uses a chemometric equation for estimating the property (Figure 5, Column 7, Lines 23-35). A view of Figure 5 of Kleinberg shows generally excellent correlation between T_2 and viscosity. Knowing the measured data, as shown in the example of Figure 5, one could determine the curve

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associated with the fit of the data. From subsequent measurements of T_2 one could then use the curve to determine an estimate of the viscosity. Therefore, the curve merely represents a "chemometric" equation for the parameter T_2 and can be used to determine viscosity is and NMR times T_1 and T_2 are correlated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the processor uses a chemometric equation for estimating the property as taught by Kleinberg into Birchak and Matsiev for the purpose of determining a fluid property.

With regards to claim 33 Birchak and Matsiev in combination do not teach the downhole tool, wherein the processor applies the resonator response to the chemometric equation to determine the property. However, Kleinberg teaches the downhole tool, wherein the processor applies the resonator response to the chemometric equation to determine the property (Figure 5, Column 11, Lines 1-21). A view of Figure 5 of Kleinberg shows generally excellent correlation between T_2 and viscosity. Knowing the measured data, as shown in the example of Figure 5, one could determine the curve associated with the fit of the data. From subsequent measurements of T_2 one could then use the curve to determine an estimate of the viscosity. Therefore, the curve merely represents a "chemometric" equation for the parameter T_2 and can be used to determine viscosity is and NMR times T_1 and T_2 are correlated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the processor uses a chemometric equation for

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estimating the property as taught by Kleinberg into Birchak and Matsiev for the purpose of determining a fluid property.

With regards to claim 4, 14, 34 Birchak and Matsiev in combination do not teach wherein the processor correlates measured resonator response correlated with known fluid property values (Figure 5, Column 7, Lines 23-35). A view of Figure 5 of Kleinberg shows generally excellent correlation between T_2 and viscosity. Knowing the measured data, as shown in the example of Figure 5, one could determine the curve associated with the fit of the data. From subsequent measurements of T_2 one could then use the curve to determine an estimate of the viscosity. Therefore, the curve merely represents a "chemometric" equation for the parameter T_2 and can be used to determine viscosity is and NMR times T_1 and T_2 are correlated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the processor uses a chemometric equation for estimating the property as taught by Kleinberg into Birchak and Matsiev for the purpose of determining a fluid property.

Claims 5-8, 15-18, 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak et al. (5,741,962) and Matsiev et al. (6,494,079) in view of Kleinberg (6,346,813) as applied to claim 1 above, and further in view of McFarland et al (6,182,499).

With regards to claims 5-8, 15-18, 35-38 Birchak, Matsiev and Kleinberg do not teach wherein the properties are viscosity, density, dielectric constant, and resistivity.

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However, McFarland teaches wherein the properties are viscosity, density and dielectric constant (Column 11, Lines 42-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the properties are viscosity, density, dielectric constant, and resistivity as taught by McFarland into Birchak, Matsiev and Kleinberg for the purpose of determining a system and method for determining formation of fluids.

Claims 9-10, 19-20, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak et al. (5,741,962) and Matsiev et al. (6,494,079) in view of Kleinberg (6,346,813) and McFarland et al (6,182,499) as applied to claim 1 above, and further in view of He et al (5,798,982).

With regards to claim 9-10, 19-20, and 39-40, Birchak, Matsiev, Kleinberg, and McFarland do not teach the apparatus wherein the processor applies the chemometric estimated property to a Levenberg-Marquardt (LM) algorithm to determine a fluid parameter value for the fluid.

However, He teaches the apparatus wherein the processor applies the chemometric estimated property to a Levenberg-Marquardt (LM) algorithm to determine a fluid parameter value for the fluid (Column 2, Lines 48-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the apparatus wherein the processor applies the chemometric estimated property to a Levenberg-Marquardt (LM) algorithm to determine a fluid parameter value for the fluid as taught by He into Birchak, Matsiev, Kleinberg,

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and McFarland for the purpose of determining a system and method for determining formation of fluids.

Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak et al. (5,741,962) and Matsiev et al. (6,494,079) in view of Kleinberg (6,346,813) McFarland et al (6,182,499) and He et al (5,798,982), as applied to claim 1 above, and further in view of Netzer (5,763,781).

With regards to Claim 41, Birchak, Matsiev, Kleinberg, McFarland, and He does not teach the apparatus wherein the resonator comprises a mechanical resonator.

However, Netzer teaches the apparatus wherein the resonator comprises a mechanical resonator (Column 2, Lines 28-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the apparatus wherein the resonator comprises a mechanical resonator as taught by Netzer into Birchak, Matsiev, Kleinberg, McFarland, and He for the purpose of providing an improved rate sensor (Column 2, Lines 46-47).

With regards to Claim 42, Birchak, Matsiev, Kleinberg, McFarland, and He does not teach the apparatus wherein the resonator comprises a tuning fork.

However, Netzer teaches the apparatus wherein the resonator comprises a tuning fork (Column 2, Lines 28-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the apparatus wherein the resonator comprises a tuning fork as taught by Netzer into Birchak, Matsiev, Kleinberg, McFarland, and He for the purpose of providing an improved rate sensor (Column 2, Lines 46-47).

Response to Arguments

Applicant's arguments filed November 14, 2006 have been fully considered but they are not persuasive. Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely determining a property of a fluid downhole would not appear to be sufficient to constitute a tangible result, since the outcome of the determining a property of a fluid downhole step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Examiner would like to apologize to applicant for not responding to the arguments of the previous office action that Birchak teaches away from an acoustic transducer in contact with the fluid. Applicant refers to the Birchak reference, " the delay line 104 maybe a machineable glass or any other suitable material that would sufficiently delay the acoustic signal passing therethrough, preferable by a time that exceeds the transducer ringdown time..." Applicant argues that if the transducer were actually in contact with the borehole fluid, the device of Birchak would be rendered inoperative due to inability to measure a signal during the transducer ringdown.

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Examiner disagrees with applicant has the prior art cites, " sufficiently delay the acoustic signal passing..." This does not mean the device would be rendered inoperative.

According to the prior art, a signal can still be measured.

Applicant further argues that the combination of Birchak and Matsiev is a clear and categorical teaching away from combining the references. The purpose to combine the two references is to teach the lacking limitation of including a resonator in contact with the fluid. Matsiev teaches a resonator or in contact with fluid as seen in Figure 2, Abstract, Column 7, Lines 29-50. The motivation to include a resonator in contact with the fluid as taught by Matsiev into Birchak for the purpose of measuring the physical, electrical, and chemical transformation of fluid composition (Matsiev, Column 1, Lines 39-50).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sujoy K. Kundu whose telephone number is 571-272-8586. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SKK
11/30/2006


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